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IN THE CLAIMS:

1. (Currently Amended) A plasma-processing method comprising ~~the steps of:~~

providing a grounded electrode located within a process chamber;

mounting a silicon-containing substrate on a mounting unit ~~disposed comprising an electrode located within a~~ the process chamber;

generating plasma ~~through by~~ feeding plasma-generating gas ~~including comprising~~ fluorine-containing gas into the process chamber and ~~through causing a plasma discharge by applying a high frequency voltage across a volume of said gas within said chamber between said electrode of said mounting unit and the grounded electrode;~~ and

etching the silicon-containing substrate with the plasma while keeping the silicon-containing substrate at a ~~predetermined temperature of~~ at least 40°C or higher.

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2. (Currently Amended) The plasma-processing method of ~~elaim-1, comprising:~~

providing a grounded electrode located within a process chamber;

mounting a silicon-containing substrate on a mounting unit comprising an electrode located within the process chamber;

generating plasma by feeding plasma-generating gas comprising fluorine-containing gas into the process chamber and causing a plasma discharge by applying a high frequency voltage across a volume of gas within said chamber between said mounting unit and the grounded electrode; and

etching the silicon-containing substrate with the plasma while keeping the silicon-containing substrate at a temperature of at least 40°C.

wherein the silicon-containing substrate is a silicon wafer having a first side having a protective tape affixed thereon and a second side opposite the first side,

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wherein said ~~step of mounting~~ the silicon-containing substrate ~~includes the sub-step of~~ comprises mounting the silicon wafer on the mounting unit while with the protective tape ~~contacts with~~ located between the wafer and the mounting unit, and

wherein said ~~step of etching~~ the silicon-containing substrate ~~includes the sub-step of~~ comprises etching the second side while the mounting unit is held at the predetermined temperature.

3. (Currently Amended) The method of claim 2, ~~wherein the~~ additionally comprising removing from the second side of the silicon wafer ~~has a~~ stressed layer previously formed by polishing or grinding, and ~~said step of etching the second side~~ including the sub-step of removing the stressed layer before etching the second side.

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4. (Currently Amended) The method of claim 2, wherein the ~~predetermined said temperature is a temperature not causing the protective tape to exceed below~~ a heat resistance temperature of the protective tape.

5. (Currently Amended) The method of claim 1, wherein the fluorine-containing gas is ~~one of~~ selected from the group consisting of carbon tetrafluoride and sulfur hexafluoride.

6. (New) The method of claim 2, wherein the fluorine-containing gas is selected from the group consisting of carbon tetrafluoride and sulfur hexafluoride.